

FIG.1

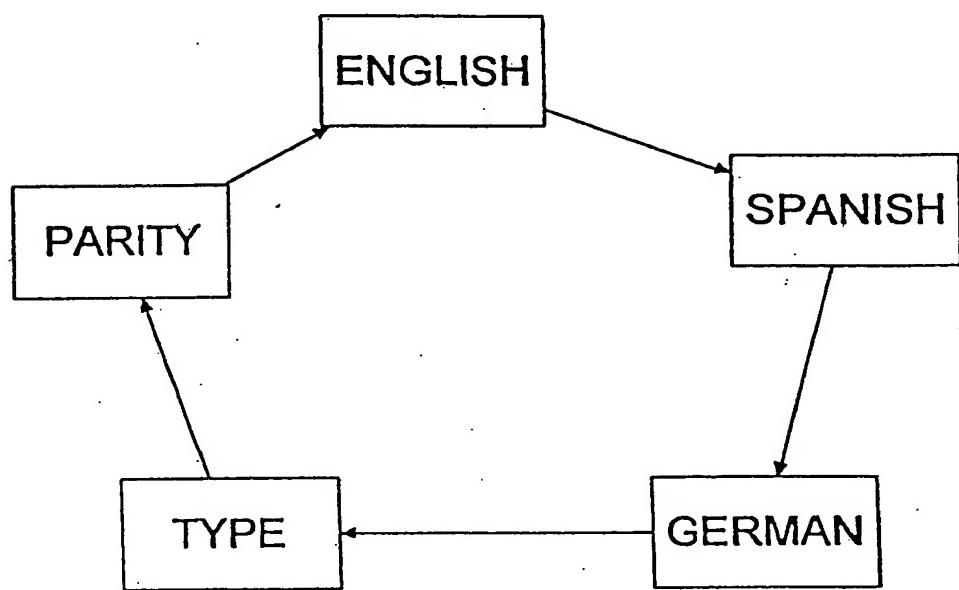


FIG.2

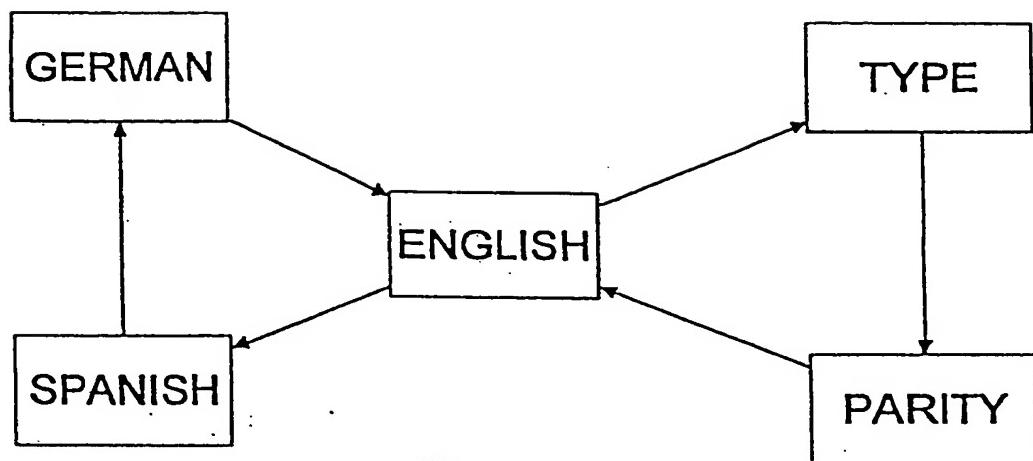


FIG.3

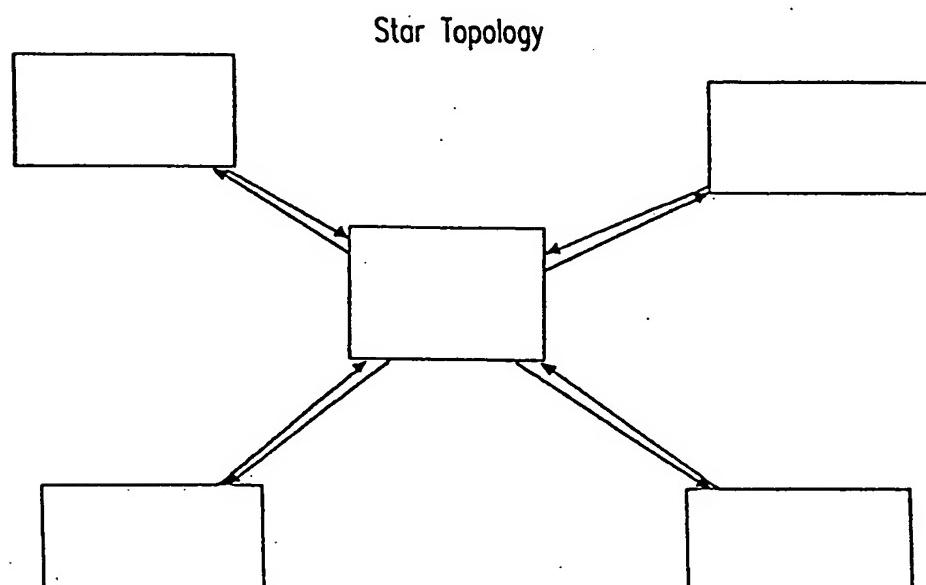


FIG.4

Row get_valrec(Row R, Column C)

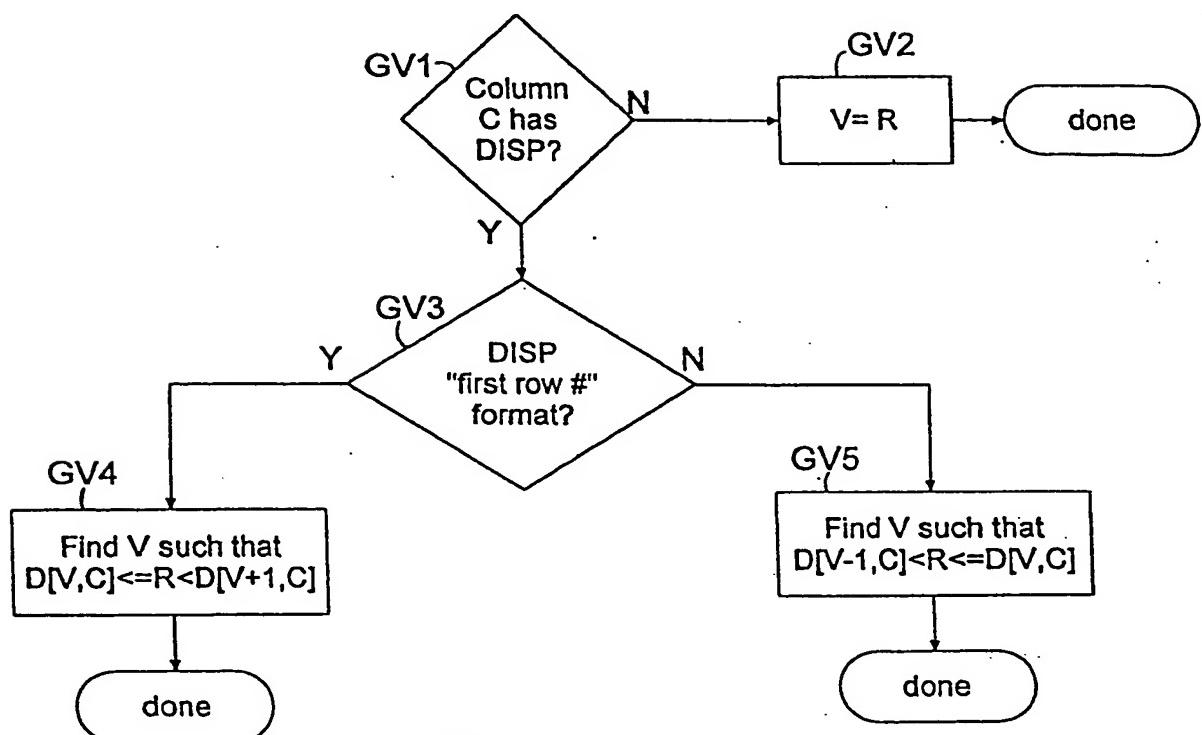


FIG.5

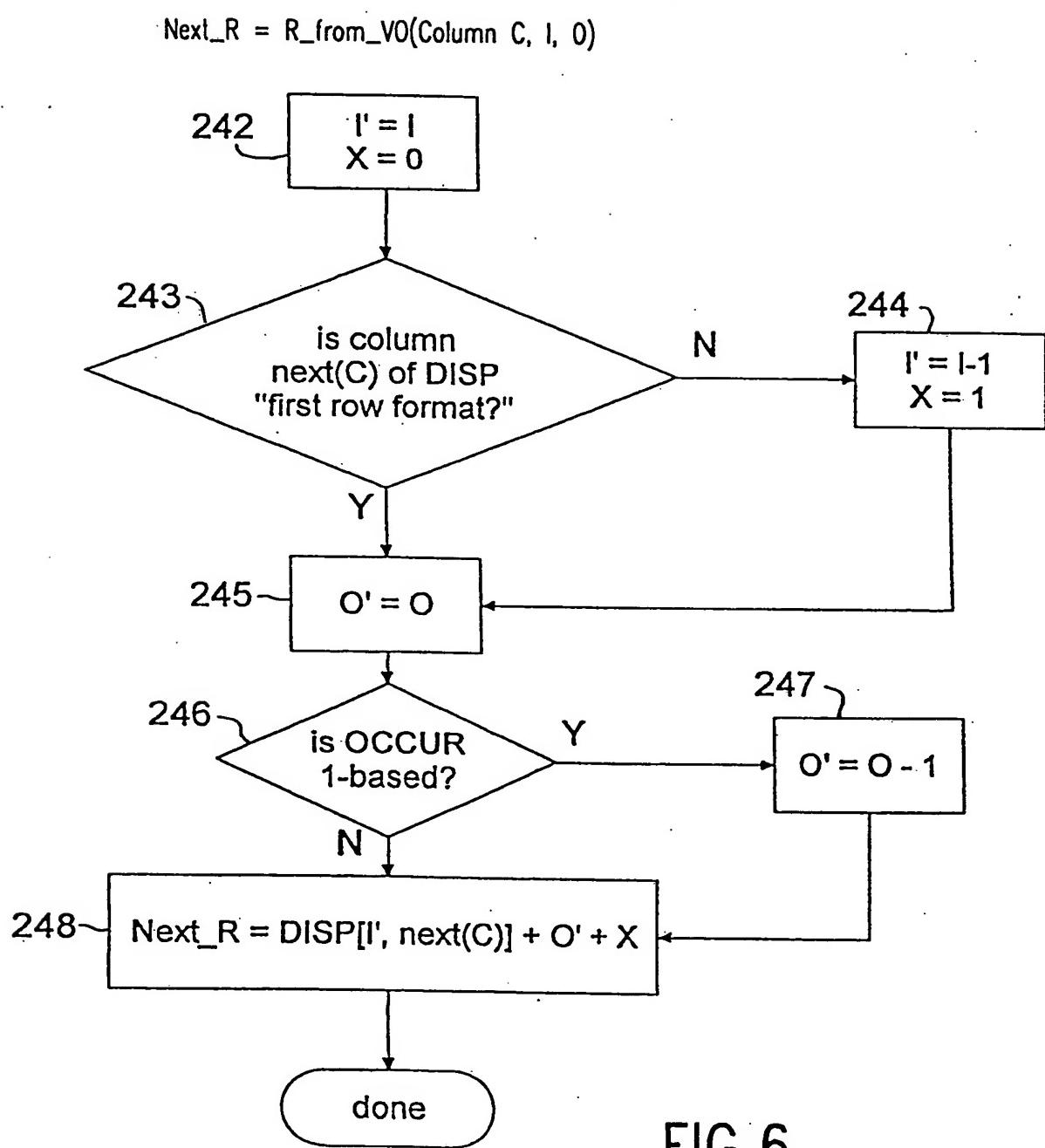


FIG.6

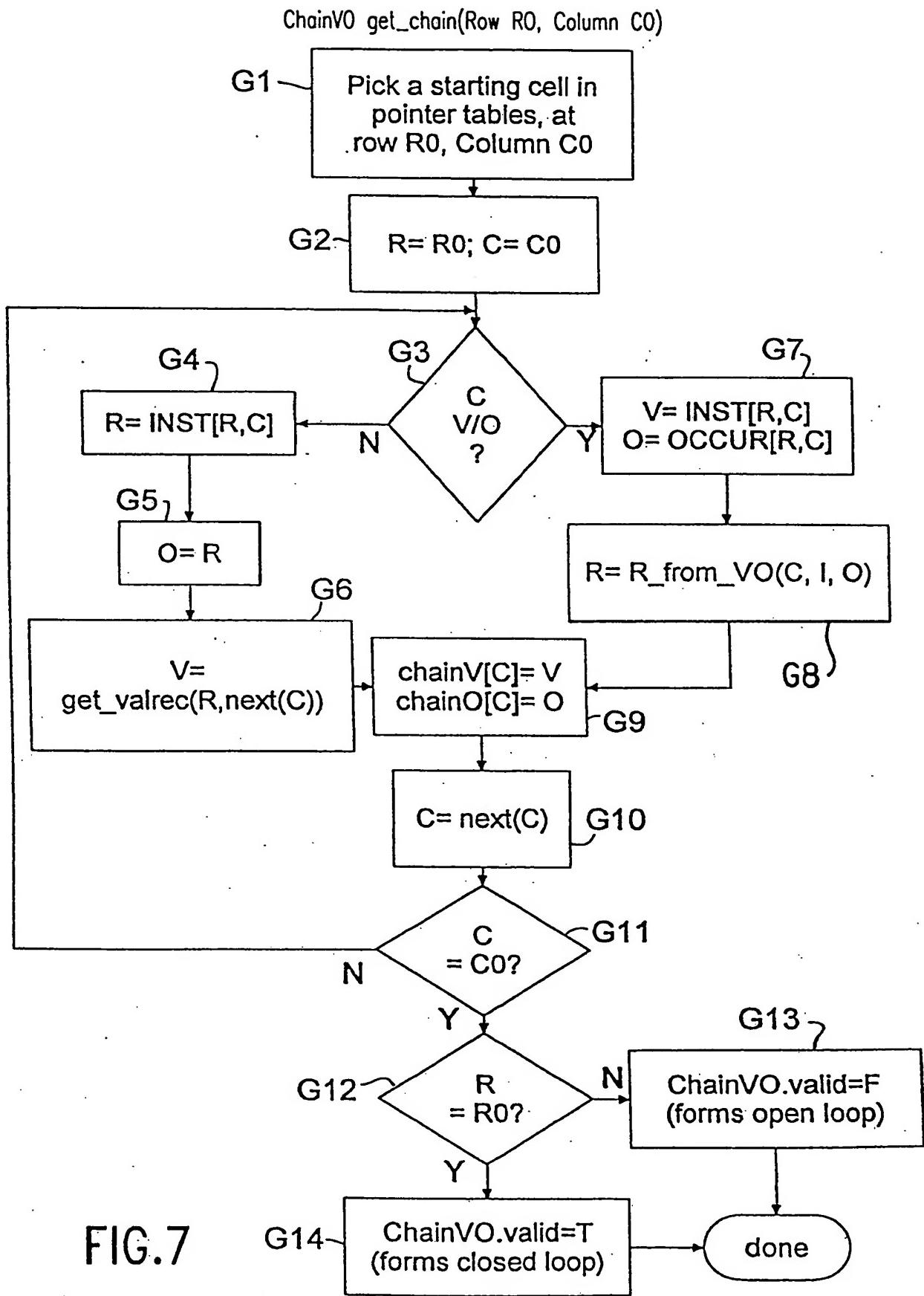


FIG.7

int put_chain(Column C0, ChainVO rec, int count)

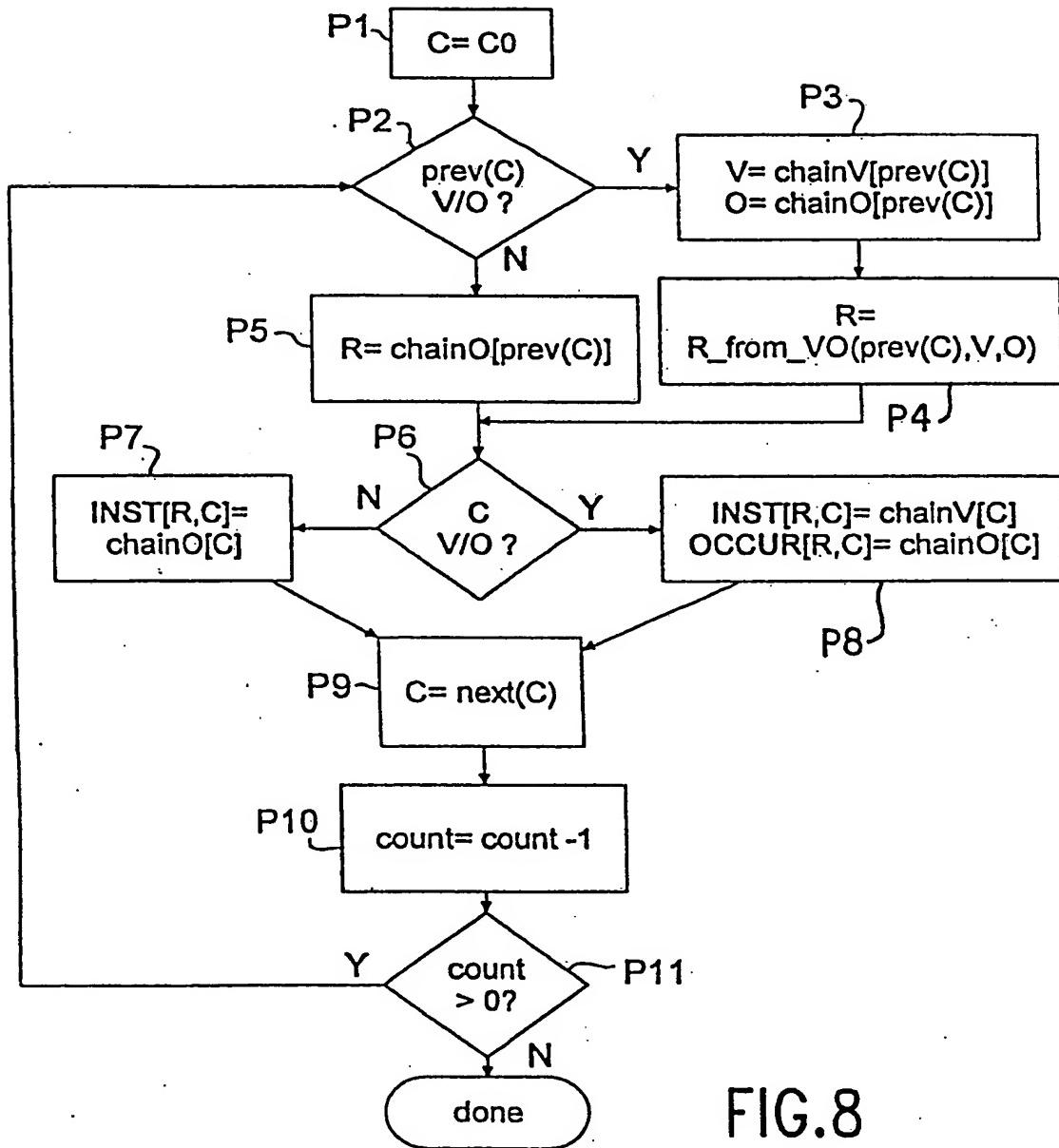


FIG.8

```
int swap(Column C, Row R1, Row R2)
```

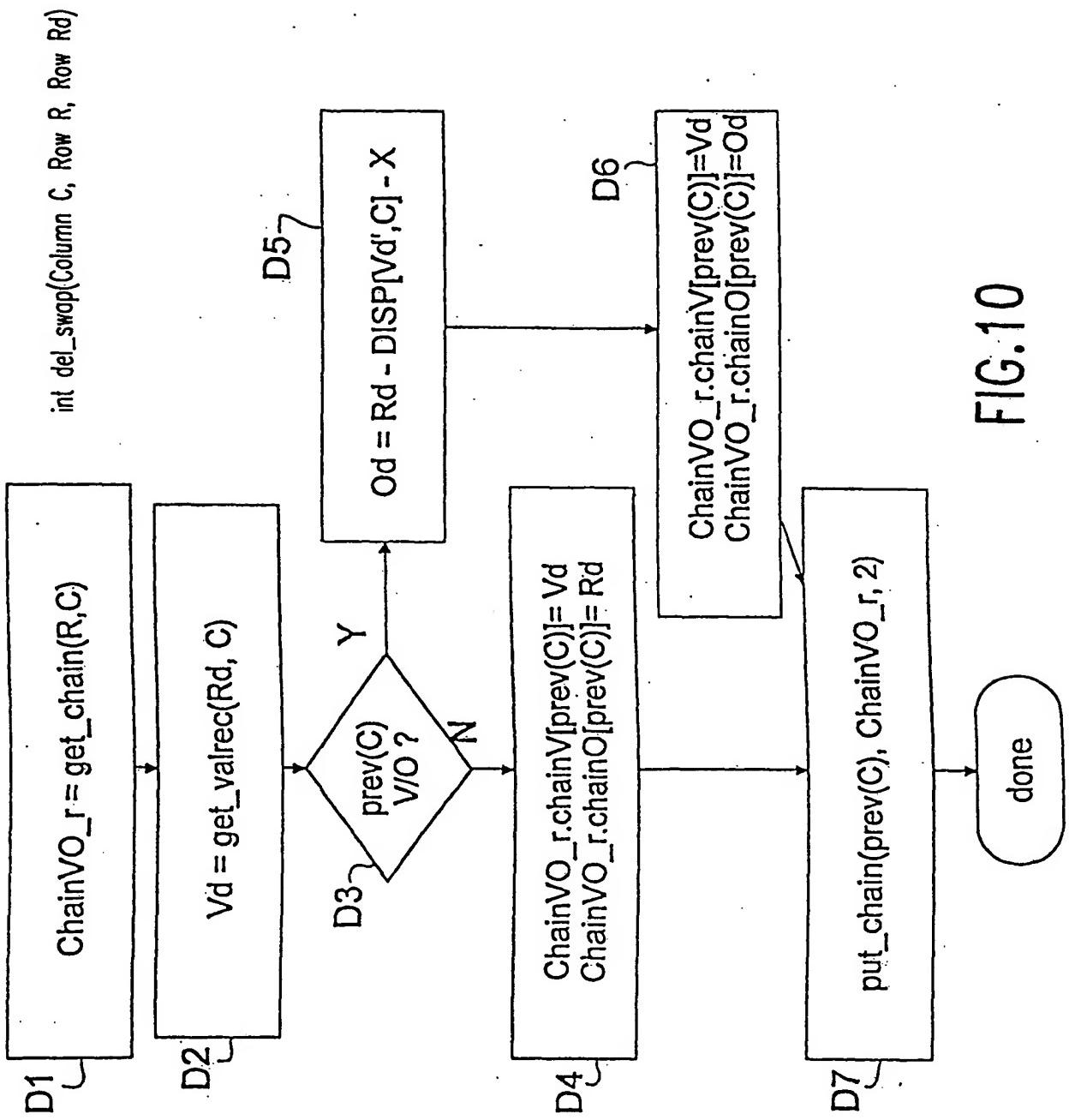
S1
ChainVO_1 = get_chain(R1, C)
ChainVO_2 = get_chain(R2, C)

S2
Interchange values:
ChainVO_1.chainV[prev(C)] \leftrightarrow ChainVO_2.chainV[prev(C)]
ChainVO_1.chainO[prev(C)] \leftrightarrow ChainVO_2.chainO[prev(C)]

S3
put_chain(prev(C), ChainVO_1, 2)
put_chain(prev(C), ChainVO_2, 2)

S4
return success code
done

FIG.9



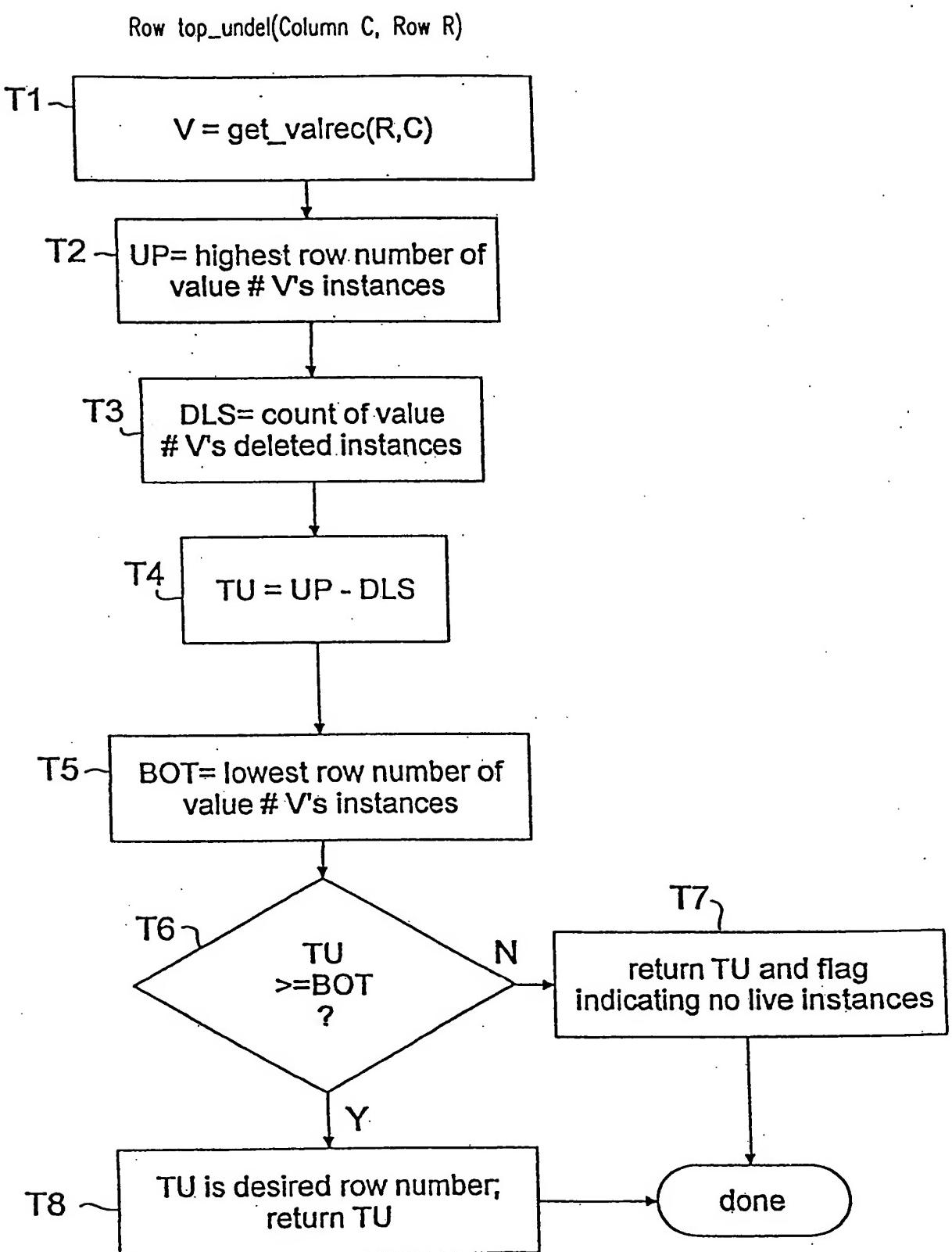


FIG.11

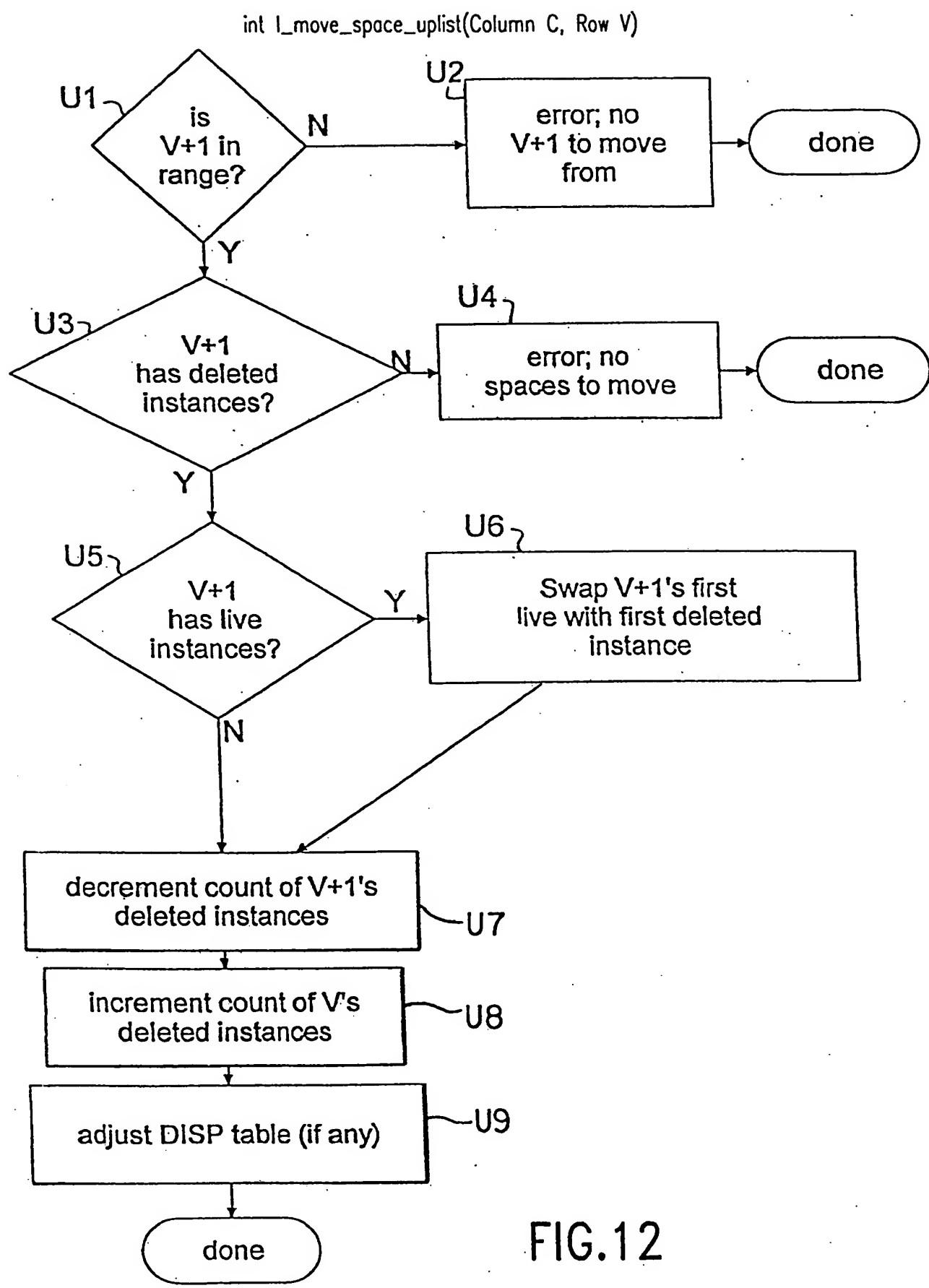


FIG.12

int l_move_space_downlist(Column C, Row V)

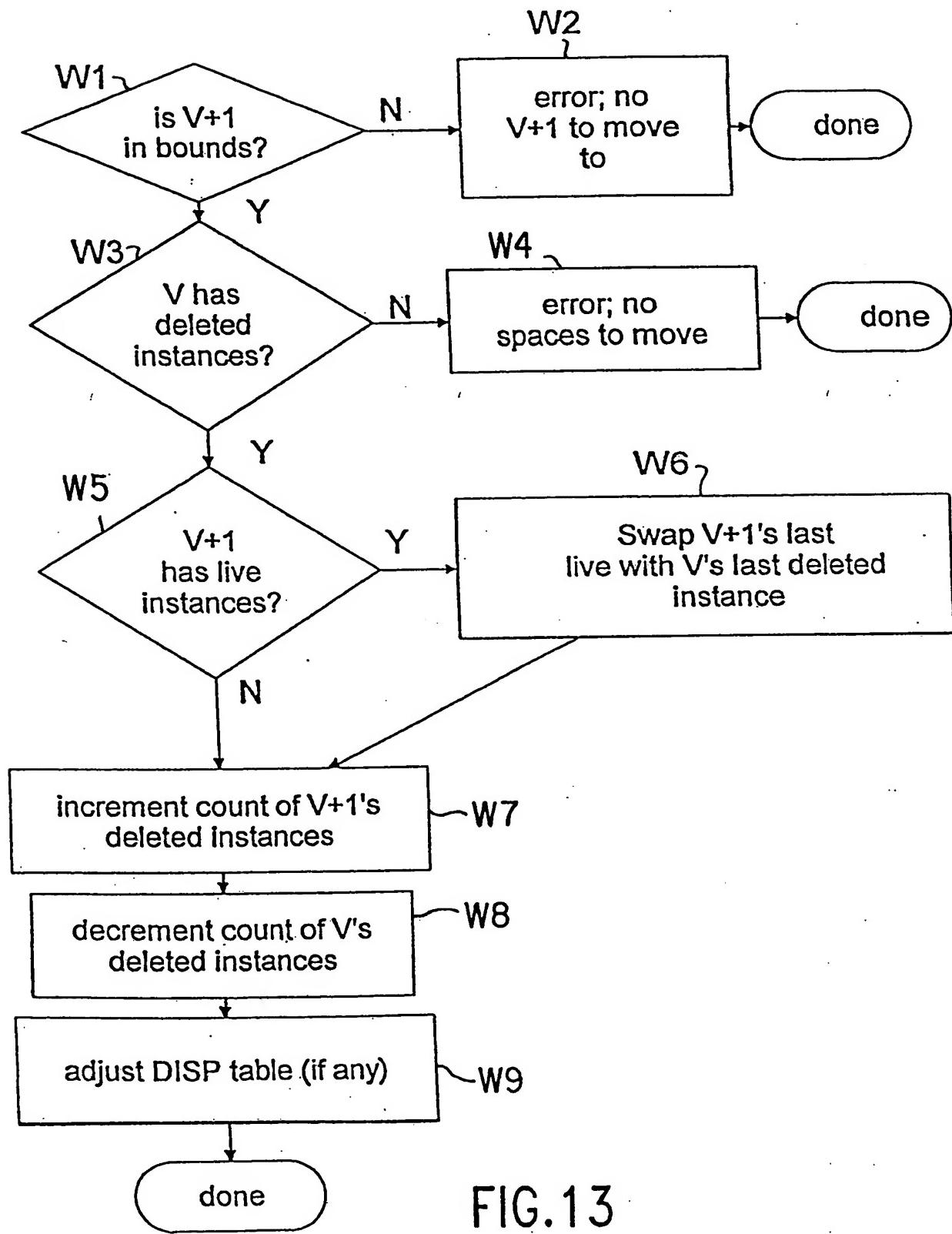


FIG.13

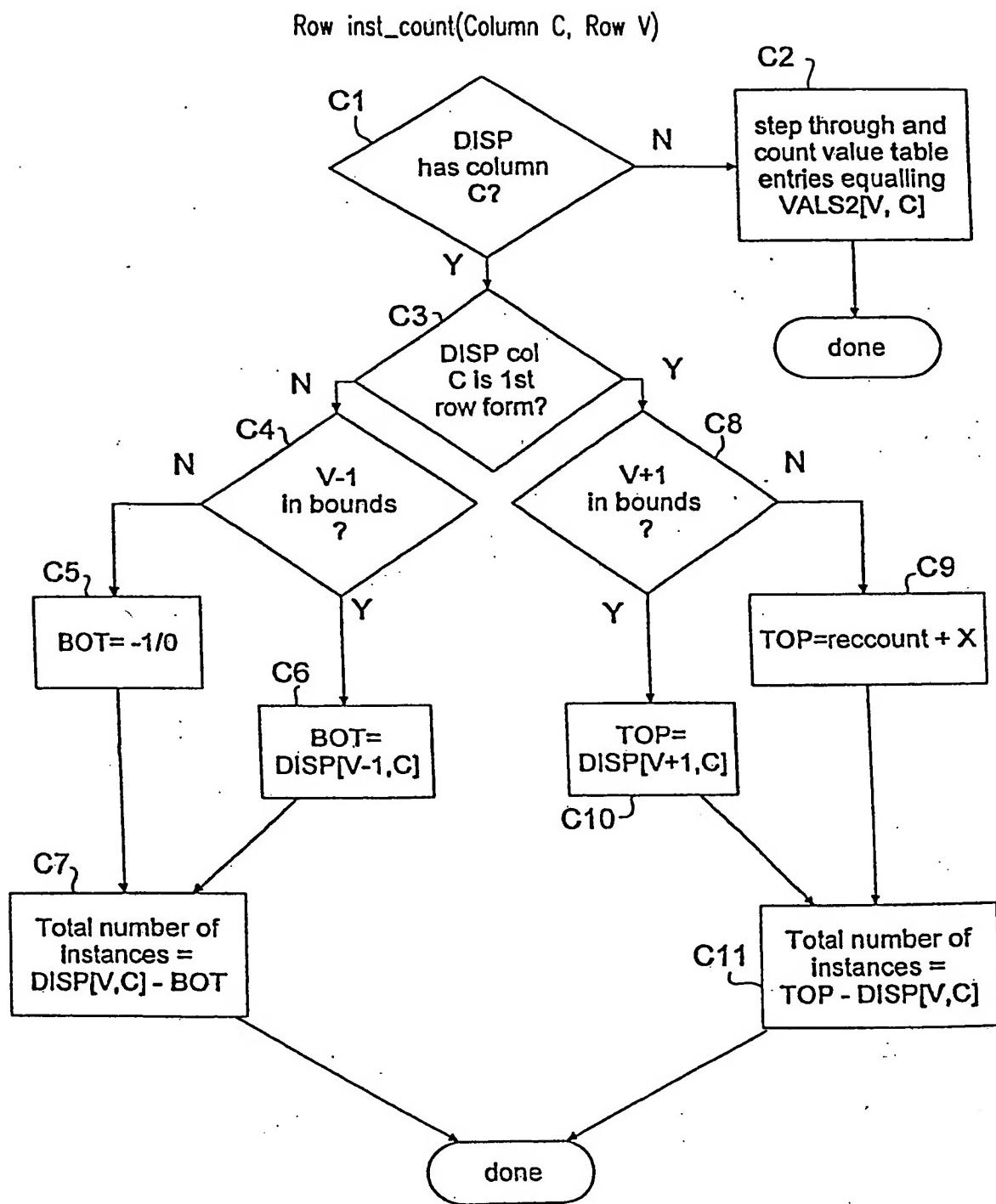
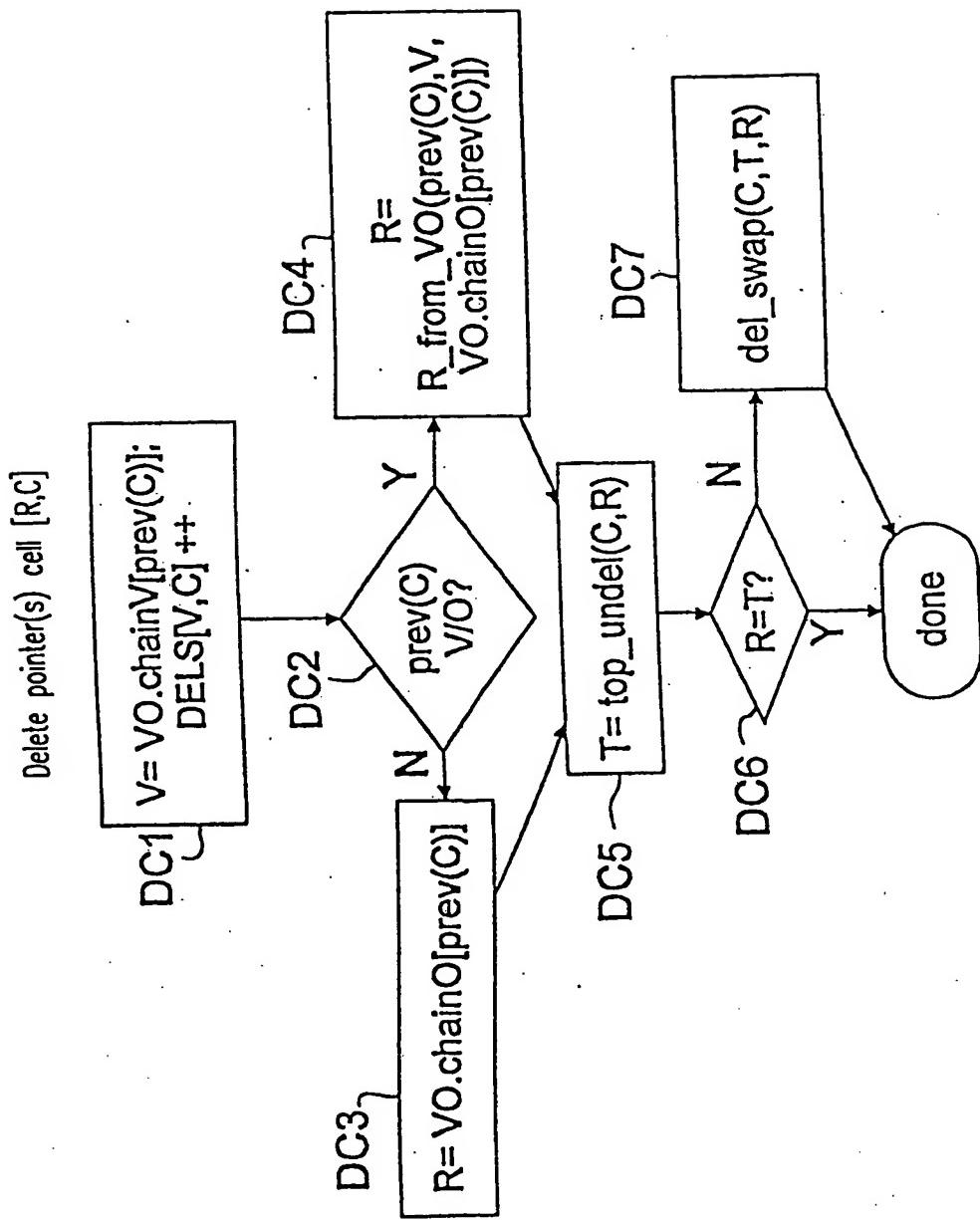


FIG.14

FIG.15



int insert_v(Row V, Column C, void *newvalptr)

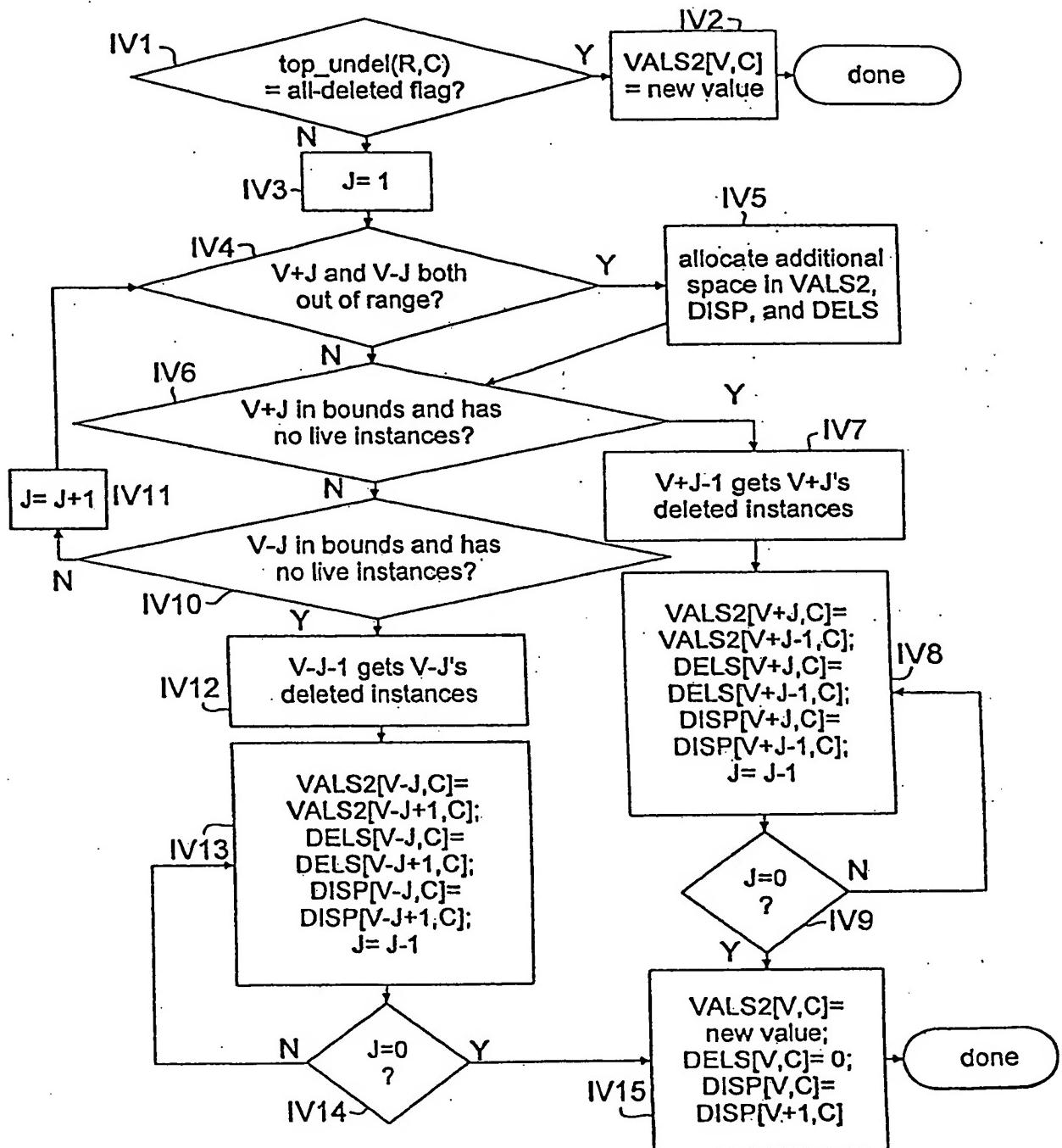


FIG.16

```
int insert_vov(Row V, Column C, void *newvalptr)
```

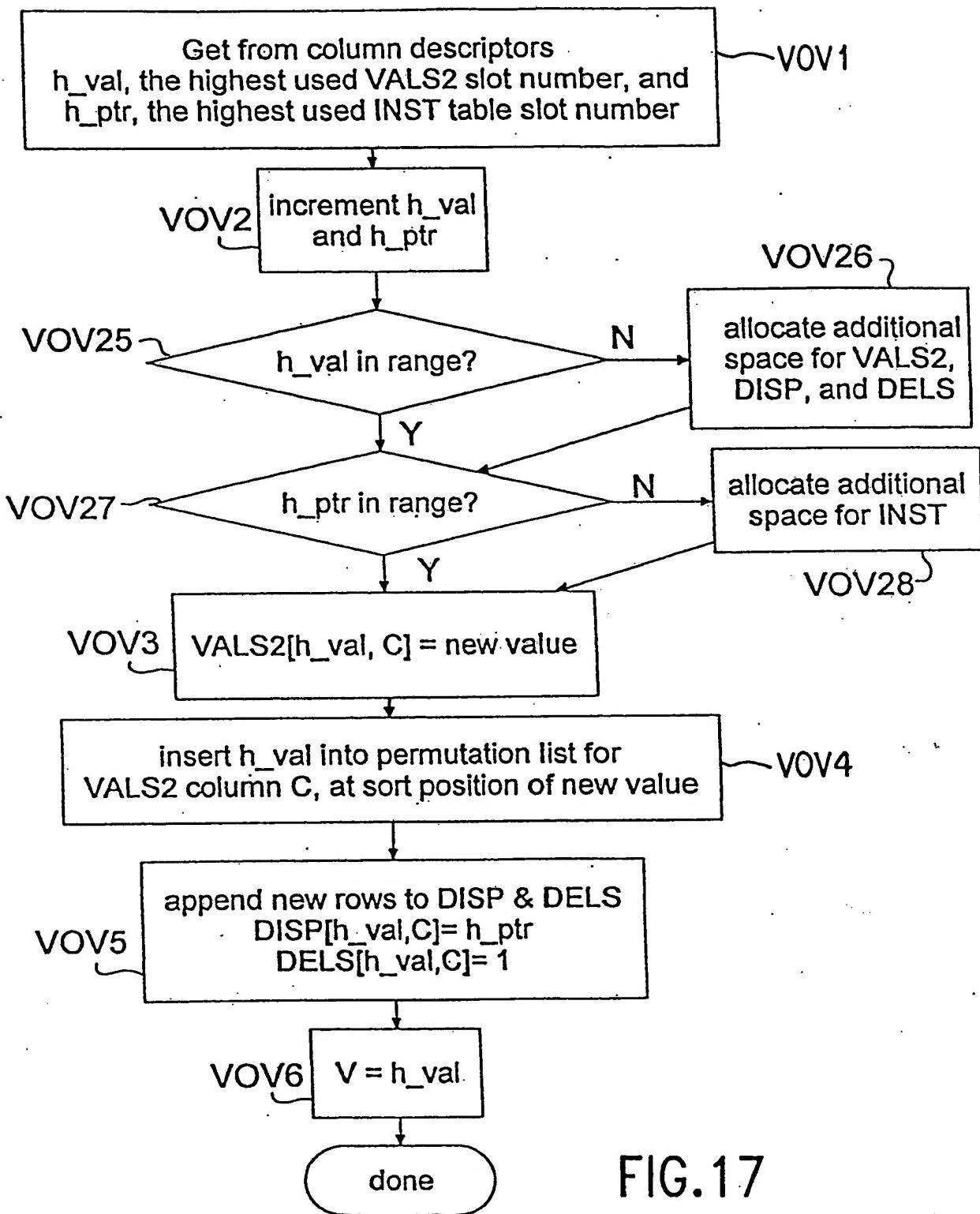


FIG.17

int insert_c(ChainVO VO, Column C)

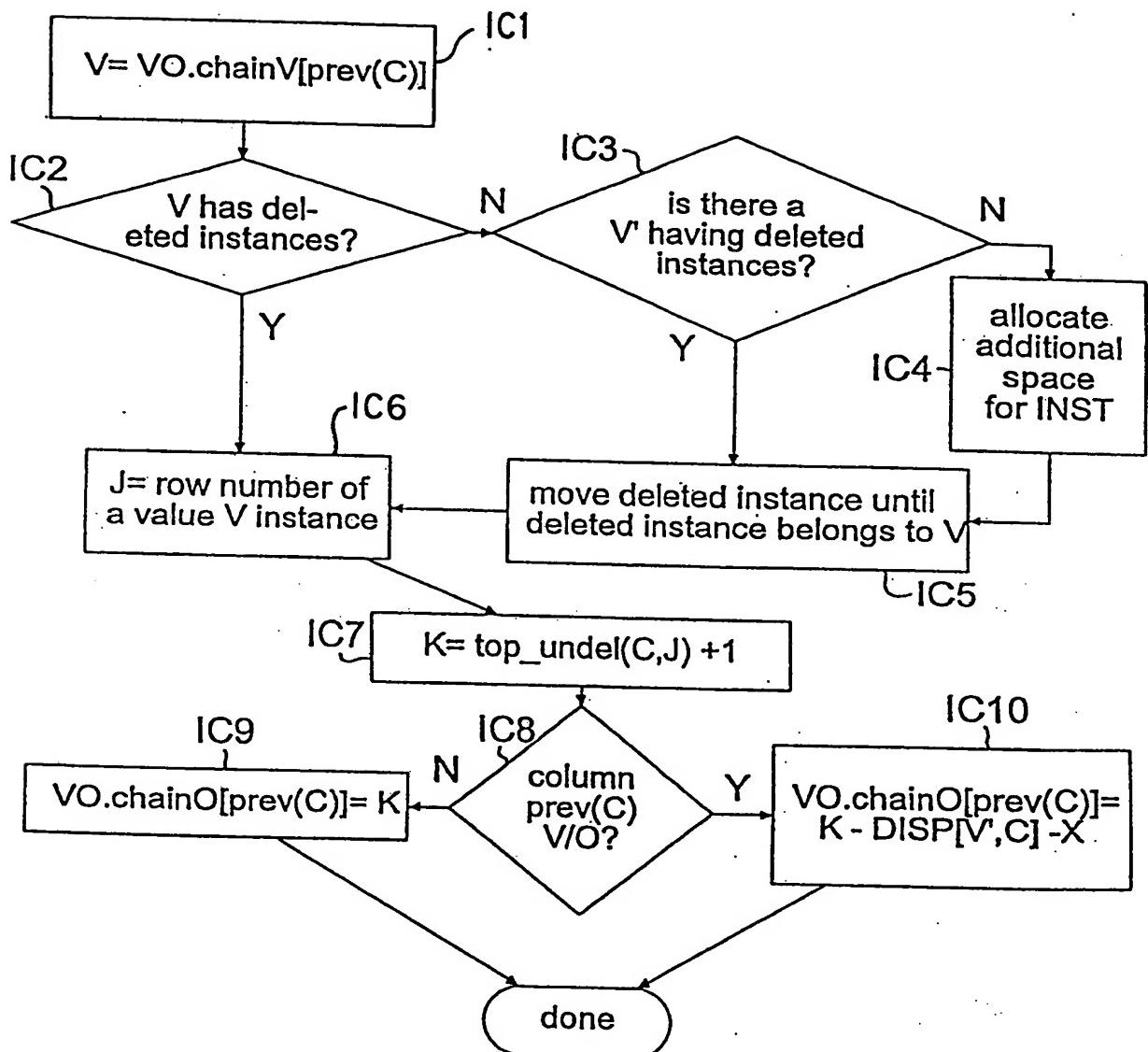


FIG.18

Delete record through cell [R0, C0] of pointer table(s)

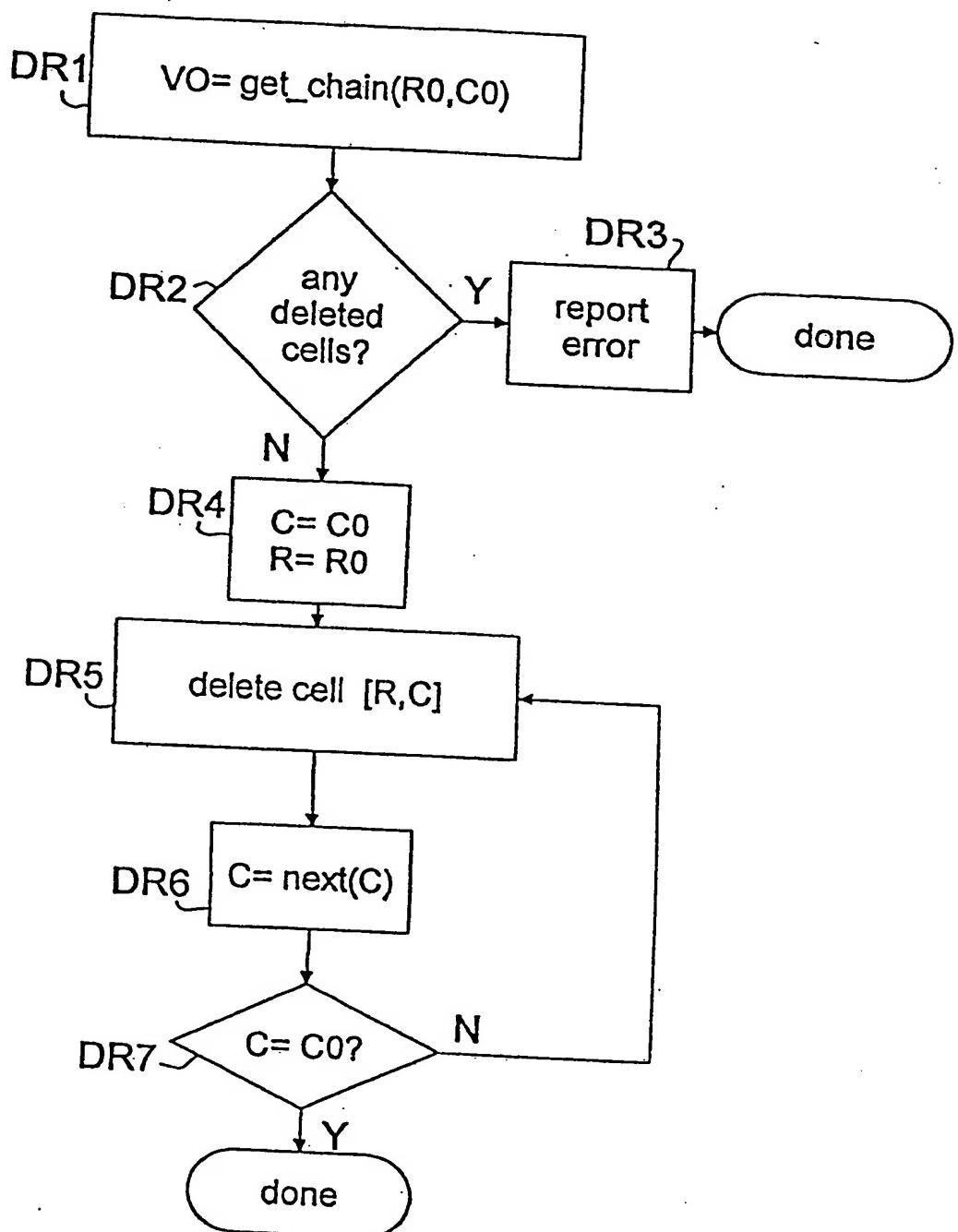


FIG.19

Insert New Record

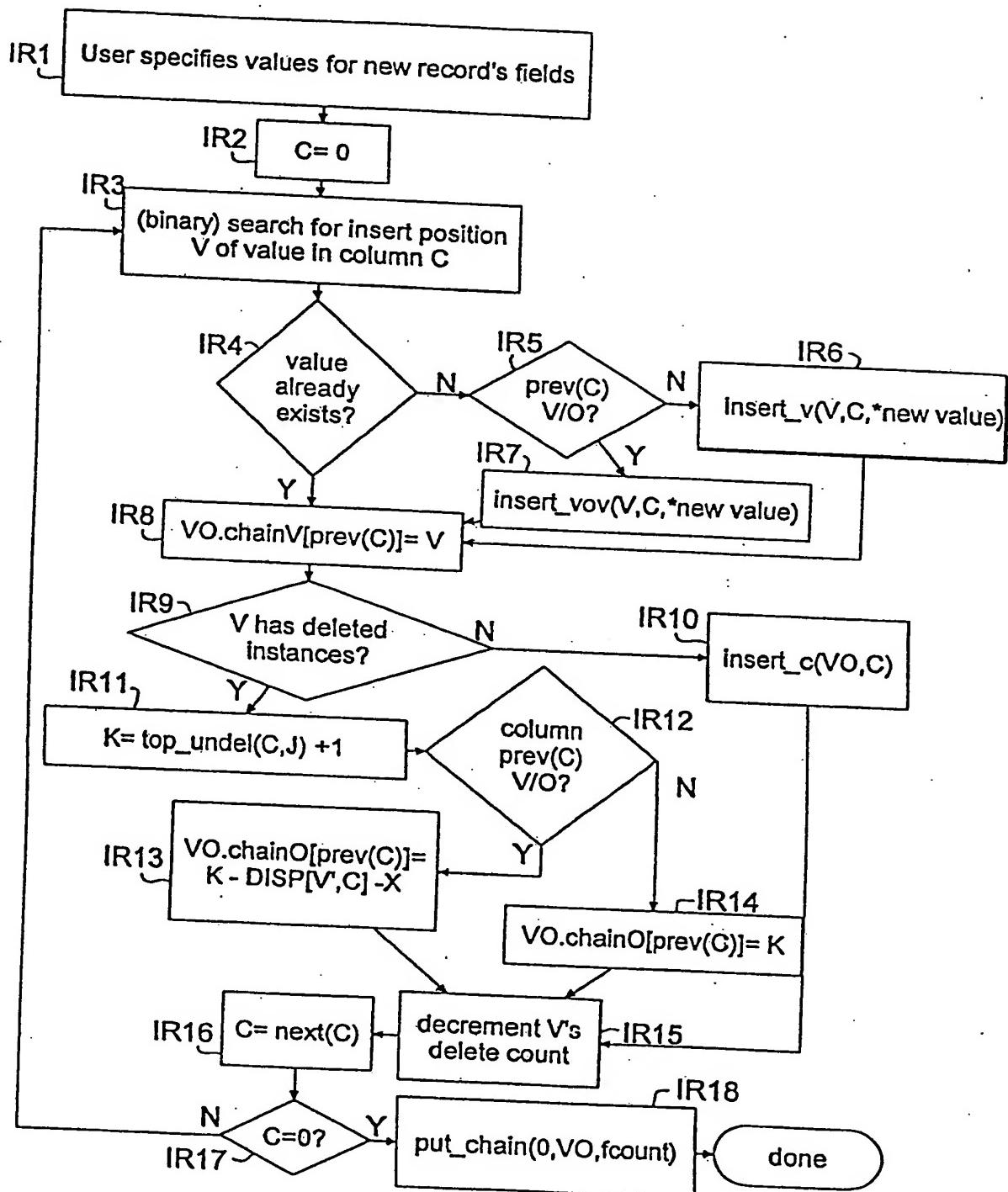


FIG. 20

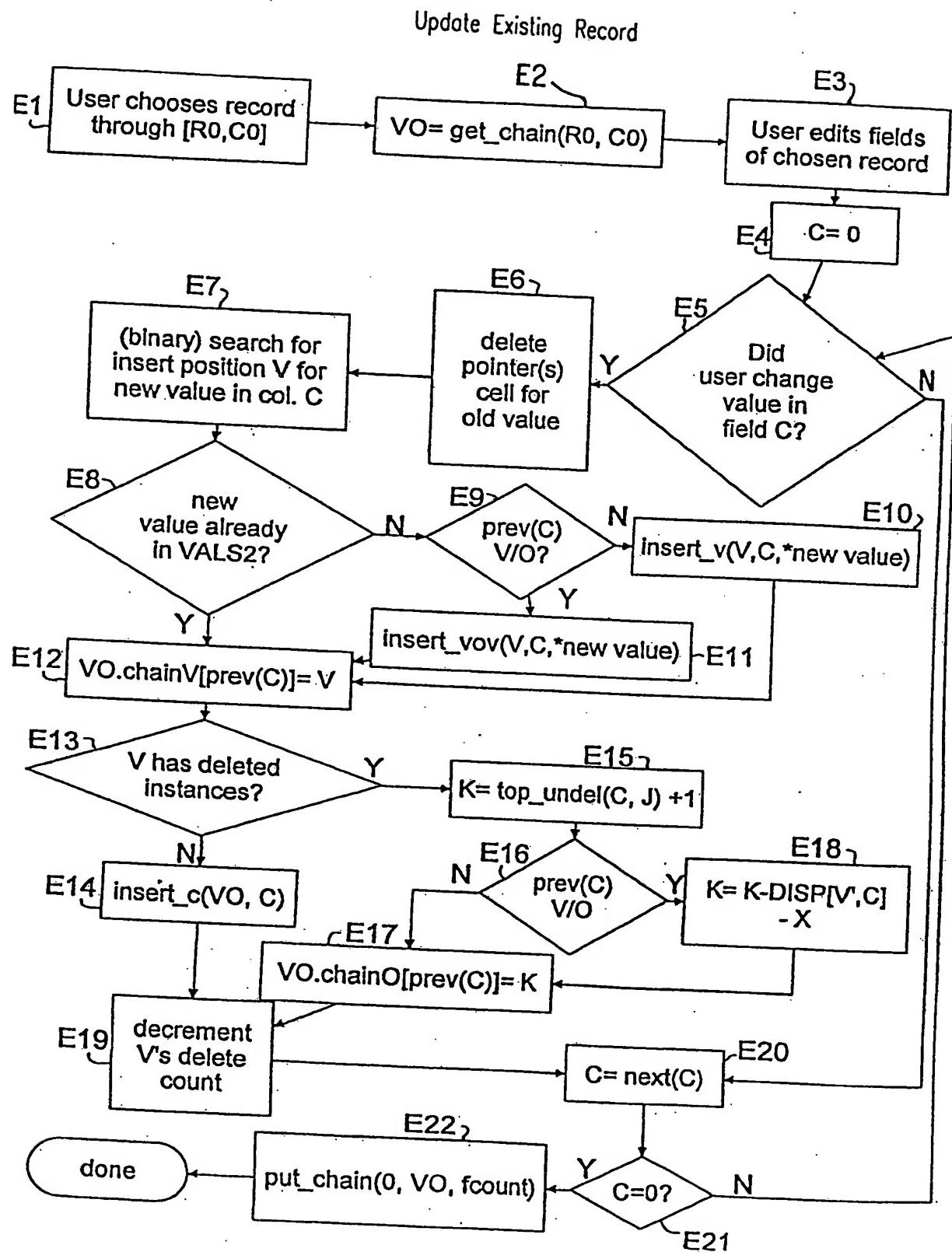


FIG.21

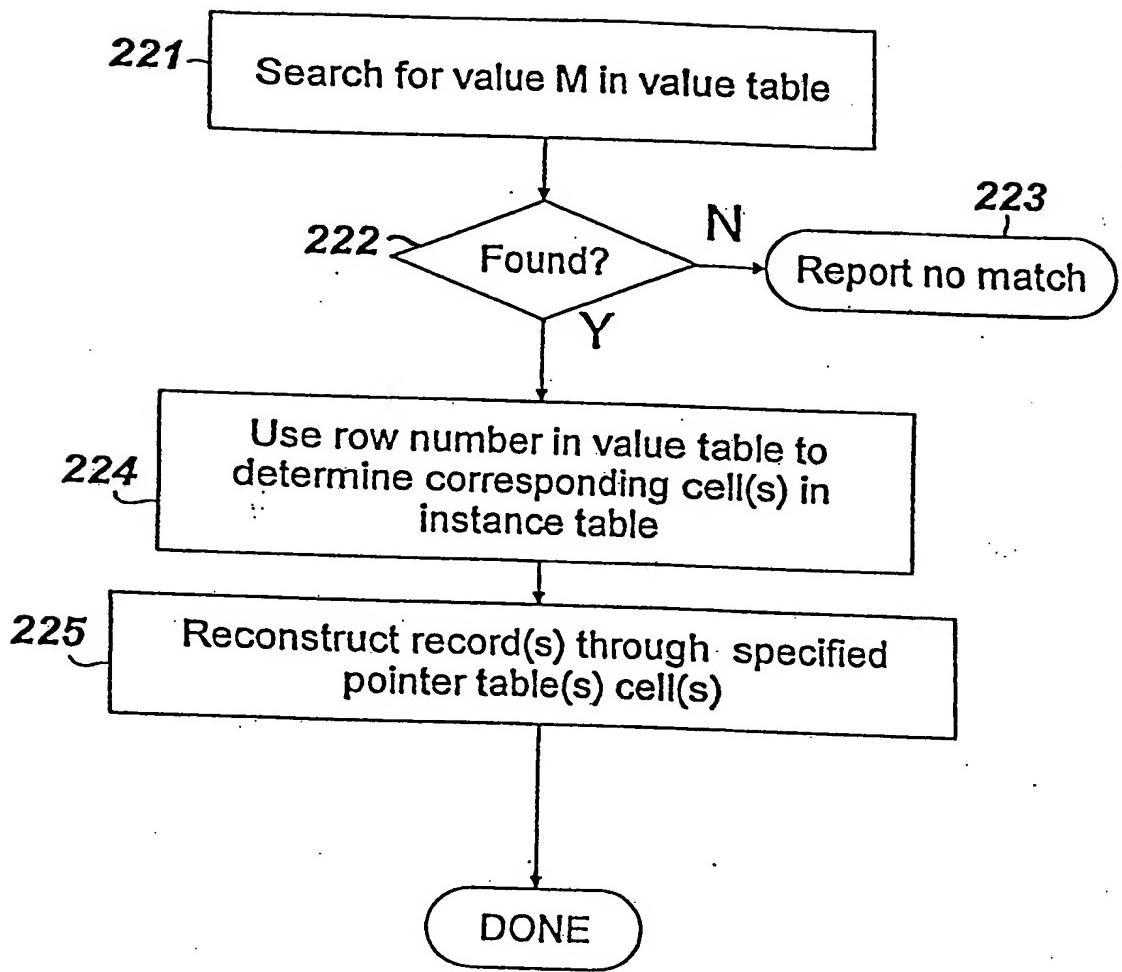


FIG.22

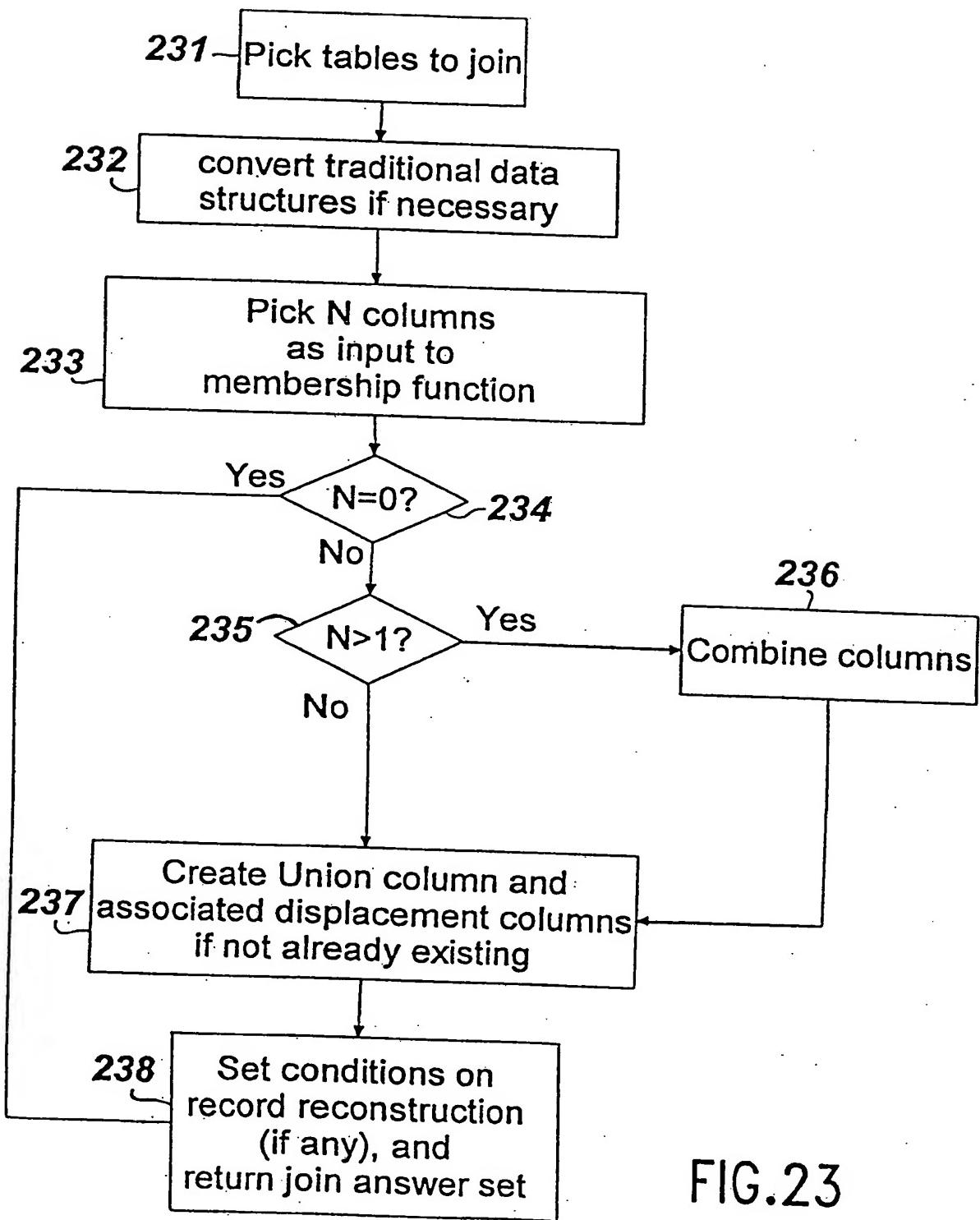


FIG.23